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REDACTED – FOR PUBLIC INSPECTION

March 25, 2015

By ECFS

Marlene H. Dortch
Secretary
Federal Communications Commission
445 12th Street S.W.
Washington, DC 20554

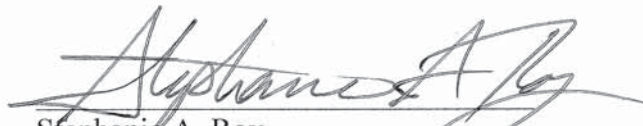
Re: Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 14-57

Dear Ms. Dortch:

Pursuant to the *Second Amended Modified Joint Protective Order*¹ (“*Modified Joint Protective Order*”), DISH Network Corporation (“DISH”) submits the attached redacted *ex parte* letter. The letter is accompanied by redacted versions of responses from DISH’s expert economists Professor David Sappington and Dr. William P. Zarakas, and DISH Executive Vice President and *Sling TV* CEO Roger J. Lynch, attached as Appendices A, B, and C to the letter. DISH has denoted with “[[]]” symbols information that it has deemed Confidential and has denoted with “{{ }}” symbols information that it has deemed Highly Confidential pursuant to the *Modified Joint Protective Order*. Unredacted versions of the documents have been filed with the Commission and will be made available pursuant to the terms of the *Modified Joint Protective Order*.

Please contact me with any questions.

Respectfully submitted,


Stephanie A. Roy
Counsel for DISH Network Corporation

¹ Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 14-57, *Second Amended Modified Joint Protective Order*, DA 14-1639 ¶ 14 (Nov. 12, 2014).

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By HAND DELIVERY

March 25, 2015

Marlene H. Dortch
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Federal Communications Commission
445 12th Street, S.W.
Washington, DC 20554

Re: Applications of Comcast Corp. and Time Warner Cable Inc. for Consent to Assign or Transfer Control of Licenses and Authorizations, MB Docket No. 14-57

Dear Ms. Dortch,

DISH Network Corporation (“DISH”) submits this letter and supplemental declarations in response to attempts by the Applicants to rebut a small portion of DISH’s over-the-top (“OTT”) business case and programming foreclosure analysis.¹ In their attached declarations, *Sling TV* CEO, Mr. Roger Lynch, and DISH’s experts, Professor David Sappington and Dr. William Zarakas, demonstrate that Comcast’s limited rebuttals are incorrect.

DISH submitted a comprehensive business case based on its DISH World and *Sling TV* launch experience. This model shows that, while a new OTT offering could survive foreclosure by either of the two Applicants standing alone, it would likely not survive such conduct in the hands of an integrated Mega-Comcast. The business case calculates the net present value (positive or negative) that an OVD can expect over a set time period from an OTT offering under

¹ Gregory Rosston and Michael Topper, Response to Arguments and Questions on the Commission’s Foreclosure Bargaining Models, MB Docket No. 14-57 (Feb. 20, 2015) (attached to Letter from Michael Hurwitz, Counsel to Comcast Corp., to Marlene Dortch, Secretary, FCC, MB Docket No. 14-57 (Feb. 20, 2015)); Mark Israel, Response to Dr. Sappington’s Model of Potential OVD Foreclosure, MB Docket No. 14-57 (Feb. 23, 2015) (attached as Appendix C to Letter from Francis Buono, Counsel to Comcast Corp., to Marlene Dortch, Secretary, FCC, MB Docket No. 14-57 (Feb. 23, 2015)).

Marlene H. Dortch
March 25, 2015
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various market access scenarios. The calculations take into account net subscriber additions, customer churn, disconnects, end-of-period subscribers and average subscribers, variable contribution margins, subscriber acquisition costs, and overhead and capital expenditures.

But Dr. Israel's criticism is targeted at a mere two aspects of this multi-faceted model. First, Dr. Israel says that DISH was wrong to use 25 Mbps-plus households as its exclusive target market. Second, according to him, DISH forgets that Comcast is technically unable to single out DISH's traffic for foreclosure purposes. Dr. Israel is wrong on both counts. As Dr. Sappington explains, Dr. Israel's presumptuous argument that an OVD should be able to make do with lower-speed subscribers flies in the face of industry consensus and Comcast's own marketing, including the fact that the lowest speed Comcast advertises as suitable for streaming video is 25 Mbps.² And as explained by *Sling TV* CEO, Mr. Roger Lynch, Dr. Israel also fails to grasp the *Sling TV* marketing model.³ DISH targets high speed broadband homes and promises access to its product on a variety of devices both inside and outside the home.⁴ As to Comcast's assertion that Comcast is technically powerless to target an OVD, it is belied both by the Netflix incident and by the capabilities of deep packet inspection, which allows Internet service providers to identify both the content and source of a packet.⁵

Comcast's criticism is similarly marginal with respect to the analysis of Comcast's incentive to foreclose rival distributors from NBCU programming. Mr. Zarakas demonstrates that Drs. Rosston and Topper's rebuttal overwhelmingly relies on errors and departures from the Commission's foreclosure model in a number of areas. Among other things, Drs. Rosston and Topper make foreclosure seem less attractive to Comcast by totally erasing any revenues that Comcast would reap from selling bundles to subscribers won from satellite television providers.⁶ They also front-load a massive portion of the costs associated with the new subscribers to

² David Sappington, Response to Dr. Israel's Comments on the DISH OTT Model, MB Docket No. 14-57, ¶¶ 4-7 (Mar. 25, 2015) (attached as Appendix A to Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp., to Marlene Dortch, Secretary, FCC, MB Docket No. 14-57 (Mar. 25, 2015)).

³ Roger Lynch, Supplemental Declaration of Roger Lynch, MB Docket No. 14-57, ¶¶ 4-5 (Mar. 25, 2015) (attached as Appendix B to Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp., to Marlene Dortch, Secretary, FCC, MB Docket No. 14-57 (Mar. 25, 2015)).

⁴ *Id.*

⁵ *Id.* ¶ 6.

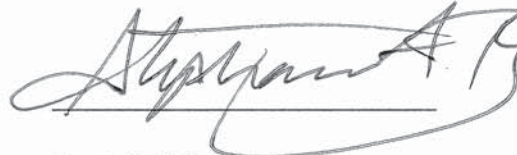
⁶ William Zarakas, Supplemental Declaration: Analysis of the FCC's Vertical Foreclosure and Nash Bargaining Models, MB Docket No. 14-57, ¶¶ 76-79 (Mar. 25, 2015) (attached as Appendix C to Letter from Pantelis Michalopoulos, Counsel to DISH Network Corp., to Marlene Dortch, Secretary, FCC, MB Docket No. 14-57 (Mar. 25, 2015)).

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compel a conclusion that almost any foreclosure would be too costly to undertake.⁷ After correcting for these errors, Mr. Zarakas demonstrates that both multi-period and short-term foreclosure strategies would be profitable for the enlarged Comcast in a significant number of markets.⁸

Comcast has repeatedly failed to rebut adequately the evidence presented by DISH and others in this proceeding that the proposed merger is bad for competition and bad for consumers. DISH urges the Commission to deny the transaction.

Sincerely,

A handwritten signature in dark ink, appearing to read "Stephanie A. Roy", written over a horizontal line.

Pantelis Michalopoulos
Stephanie A. Roy
Counsel for DISH Network Corporation

Enclosures

⁷ *Id.* ¶ 65.

⁸ *Id.* ¶ 5.

Appendix A

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RESPONSE TO DR. ISRAEL'S COMMENTS ON THE DISH OTT MODEL

Introduction

1. In his reply declaration, Mr. Roger Lynch, Executive Vice President of the Advanced Technologies and International Group for DISH Network Corporation (“DISH”) and the CEO of *Sling TV*, presented the DISH OTT Model.¹ My understanding is that this model reflects the analysis that DISH employed when deciding whether to launch its new domestic over-the-top (“OTT”) service, *Sling TV*. The model incorporates key elements of the development and operation of *Sling TV*, including the number of high-speed data (“HSD”) customers that DISH projects will subscribe to *Sling TV*, the associated subscription and advertising revenues, and the accompanying costs of operating and continually improving *Sling TV*.

2. I employed the DISH OTT Model in my reply declaration to show the practical relevance of an important theoretical observation that appears in both my original declaration and my reply declaration.² The observation is that the proposed merger of Comcast Corporation (“Comcast”) and Time Warner Cable, Inc. (“TWC”) would enable the combined entity to control access to such a large fraction of the nation’s HSD subscribers that an OTT service could well be unprofitable without access to these subscribers. The analysis in my reply declaration employs the DISH OTT Model to demonstrate that this theoretical possibility is, in fact, a practical reality in the presence of reasonable expectations about future industry conditions.

3. In a recent *ex parte* filing,³ Dr. Israel voices concerns about both the DISH OTT Model and my analysis that employs the model. Specifically, Dr. Israel repeats two concerns that he

¹ “Reply Declaration of Roger Lynch,” Attachment A to “Reply of DISH Network Corporation,” *In the Matter of Applications of Comcast Corporation and Time Warner Cable Inc. for Consent to Assign or Transfer Control of Licenses and Authorizations*, MB Docket No. 14-57, December 22, 2014 (“DISH Reply”).

² “Declaration of Professor David Sappington,” Attachment B to “Petition to Deny of DISH Network Corporation,” *In the Matter of Applications of Comcast Corporation, Time Warner Cable Inc., Charter Communications, Inc., and SpinCo to Assign and Transfer Control of FCC Licenses and Other Authorizations for Consent to Transfer Control of Licenses and Authorizations*, MB Docket No. 14-57, August 25, 2014; “Reply Declaration of Professor David Sappington,” Attachment B to DISH Reply (“Sappington Reply Declaration”).

³ Mark Israel, “Response to Dr. Sappington's Model of Potential OVD Foreclosure,” Appendix C in Letter from Francis M. Buono, Counsel for Comcast Corporation to Marlene H. Dortch, Secretary, Federal Communications Commission, February 23, 2015 (“Israel Response”).

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raised during the Federal Communications Commission’s (“FCC’s”) Economic Analysis Workshop.⁴ First, he contends that it is inappropriate to focus on HSD subscribers with wireline service that delivers speeds of at least 25 megabits per second (“Mbps”). Second, he contends that Comcast would “have to degrade its connection to the overall Internet to a significant extent to prevent a particular edge provider from accessing [Comcast’s] network,” and that this is something Comcast would “never” do.⁵ Both of these contentions lack support and ignore contradictory evidence in the record.

Relevant Subscribers

4. Dr. Israel’s contention that it is inappropriate to focus on HSD subscribers with wireline service that delivers speeds of at least 25 Mbps is not compelling for at least four reasons. First, the contention ignores the observations of industry experts, including the Chairman of the FCC. Chairman Wheeler has noted that: (i) “A 25 Mbps connection is fast becoming “table stakes” in 21st century communications;” (ii) “even 10 Mbps doesn’t fully capture the increasing demand for better wired broadband;” and (iii) “it seems clear that mobile broadband is just not a full substitute for fixed broadband, especially given mobile pricing levels and limited data allowances.”⁶

5. Second, Dr. Israel’s contention ignores Comcast’s advice to its own customers. As I explained in my reply declaration, “Comcast informs customers through its *Xfinity* website that only services with downstream speeds of at least 25 Mbps are appropriate for streaming video.”⁷

6. Third, Dr. Israel’s observation that *Sling TV* is restricted to one video stream per household is of little relevance. The observation ignores the fact that households—even single-person households—are likely to utilize their broadband connection for other bandwidth-intensive activities at the same time that they watch *Sling TV*. As DISH has observed,

⁴ Federal Communications Commission, January 30, 2015.

⁵ Israel Response, pp. 3-4.

⁶ Prepared Remarks of FCC Chairman Tom Wheeler, “The Facts and Future of Broadband Competition,” 1776 Headquarters, Washington, D.C., September 4, 2014.

⁷ Sappington Reply Declaration, ¶ 45.

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households routinely employ multiple devices that continually send and receive data over the home Internet connection, often without any active intervention by the user.⁸

7. Fourth, Dr. Israel's observation that *Sling TV* might be viewed on mobile devices also is of limited relevance. I understand that DISH does not anticipate a significant amount of subscriptions from consumers who intend to view *Sling TV* solely on mobile devices over wireless networks. Rather, the mobile access capability is intended as an adjunct viewing mode to enhance the appeal of *Sling TV*, much like cable and satellite providers often provide ancillary access over mobile devices to increase the attraction of their video services.⁹

Targeted Sabotage

8. As noted above, Dr. Israel asserts that "Comcast would **never** degrade its connection to the overall Internet in an effort to attempt to harm one specific edge provider."¹⁰ This assertion is unconvincing for at least two reasons.

9. First, Dr. Israel declines to explain how this assertion is consistent with the observed targeted slowing of Netflix traffic on Comcast's network in 2013 and 2014 (and the {{
}} churn of Comcast's HSD subscribers during this period).¹¹

10. Second, Dr. Israel's assertion rests on the premise that Comcast cannot determine the origin of traffic that transits to its network, and so must "degrade its connection to the overall Internet."¹² Dr. Israel notes that DISH must use third-party transit providers and content delivery networks ("CDNs") to access Comcast's network because DISH does not have a direct interconnection with Comcast. This observation leads Dr. Israel to conclude that Comcast therefore cannot distinguish between traffic from *Sling TV* and other traffic that a transit provider or CDN delivers to Comcast's network. This conclusion is incorrect because it ignores the potential for deep packet inspection. I understand that deep packet inspection can be employed to

⁸ DISH Reply, p. 53.

⁹ Supplemental Declaration of Roger J. Lynch, MB Docket No. 14-57, ¶¶ 4-5 (Mar. 20, 2015) ("Supp. Lynch Decl.").

¹⁰ Israel Response, p. 4 (emphasis in original).

¹¹ The {{
}} churn of Comcast's HSD subscribers during this period is established in my reply declaration.

¹² Israel Response, p. 3.

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selectively degrade the performance of targeted traffic without significantly diminishing the performance of other traffic exchanged between Comcast and the transit provider or CDN.¹³

11. Dr. Israel does not even mention deep packet inspection, and the Applicants have tried to downplay its importance by suggesting that agreements with third parties typically bar Comcast from monitoring the data that transits its peering links.¹⁴ However, the agreements themselves do not appear to support this suggestion. As DISH has observed, only {{

}} appears to contain a restriction on Comcast's monitoring of the data passing through interconnection points.¹⁵ To my knowledge, the Applicants have not responded to this observation. This silence suggests that Comcast may well have the ability to effectively target its sabotage at selected OVDs.

Relevant Beliefs

12. Dr. Israel observes that the conclusions of my analysis of the DISH OTT Model would change if DISH had different beliefs about the revenues and costs that *Sling TV* would generate over time. While this baseline observation is correct, it is largely irrelevant. As noted above, my understanding is that the projections specified in the DISH OTT Model are the very projections that DISH employed when assessing the potential profitability of *Sling TV*. Consequently, even if these projections ultimately do not match marketplace realities exactly, these are the relevant projections to employ when assessing how the expected earnings from an OTT service like *Sling TV* would be affected by a lack of access to Comcast's and TWC's HSD customers.

13. Similarly, even if for some unexplained reason and contrary to my belief, Dr. Israel's assumption that Comcast/TWC would not sabotage an OVD's competing OTT service is correct, rational fear of such sabotage could cause the OVD to decline to bring a high-quality OTT service to market. Furthermore, even if Comcast/TWC never blocks an OVD's access to its HSD

¹³ Supp. Lynch Decl. ¶ 6.

¹⁴ Specifically, Comcast contends that it cannot "selectively block OVD content on its peering links, without deteriorating its relations with its peers and most likely violating its own and others' peering agreements, which typically preclude monitoring traffic over peering links for any purpose other than basic operations and security," Comcast and TWC, *Opposition to Petitions to Deny and Response to Comments*, MB Docket No. 14-57, September 23, 2014, p. 217, note 661.

¹⁵ DISH Reply, pp. 73-74.

subscribers, the credible threat to do so can impede competition and harm consumers. This threat can endow Comcast/TWC with pronounced leverage over OVDs and thereby severely limit the earnings an OVD anticipates from even an OTT service of extremely high quality. The anticipation of such limited earnings can diminish innovation by OVDs, which ultimately harms consumers.

Implications for Other OVDs

14. My analysis of the DISH OTT Model demonstrates that a combined Comcast/TWC could threaten the viability of even an experienced, relatively low-cost OVD.¹⁶ The analysis therefore shows that Comcast/TWC also could render even more unprofitable the operation of less well-situated OVDs. This demonstration has an important implication for Dr. Israel's critique of the DISH OTT Model and my analysis of the model. For the sake of argument, suppose the rosy market conditions that Dr. Israel posits did indeed prevail. To bolster Dr. Israel's case even further, also suppose that DISH shared these rosy projections, and so believed that *Sling TV* would be profitable even without access to Comcast's and TWC's HSD subscribers. Even under these circumstances, an OVD that is less efficient than DISH might well be unable to operate profitably without access to the HSD subscribers of Comcast and TWC.¹⁷ Consequently, a combined Comcast/TWC could threaten to render the operation of a high-quality OTT service entirely unprofitable even under conditions that are particularly favorable to Dr. Israel's case.¹⁸

¹⁶ Due in part to its brand name recognition and its established relationships with programmers, DISH may well face lower programming and subscriber acquisition costs than many other OVDs.

¹⁷ This is the case even if the less efficient OVD could operate profitably if it were able to secure uncompromised access either to Comcast's HSD subscribers or to TWC's HSD subscribers.

¹⁸ One could employ the DISH OTT Model to estimate the magnitude of the cost disadvantage that would render an OTT service unprofitable without access to the HSD subscribers of Comcast and TWC.

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* * *

The foregoing comments were prepared using facts of which I have personal knowledge or based upon information provided to me. I declare under penalty of perjury that the foregoing is true and correct to the best of my current information, knowledge, and belief.

Executed on March 25, 2015.

A handwritten signature in black ink, appearing to read 'DS', with a long horizontal line extending to the right.

David Sappington
Eminent Scholar, Department of Economics
Director, Robert F. Lanzillotti Public Policy Research Center
University of Florida

Appendix B

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SUPPLEMENTAL DECLARATION OF ROGER J. LYNCH

1. I, Roger J. Lynch, being over 18 years of age, swear and affirm as follows:

2. I make this declaration using facts of which I have personal knowledge or based on information provided to me, and in support of the submission of Professor David Sappington to the Federal Communications Commission (“FCC”) in connection with the FCC’s review of Comcast Corporation’s (“Comcast’s”) proposed acquisition of Time Warner Cable, Inc. (“TWC”).

3. I am currently Executive Vice President of the Advanced Technologies and International Group for DISH Network Corporation (“DISH”) and the CEO of *Sling TV*.

4. We project that the vast majority of *Sling TV* subscribers will view the service using a wired or wireless broadband connection in their home on, for example, a smart television. As I explained in my Declaration, the vast majority [[]] of viewing of DISH World—DISH’s foreign language over-the-top (“OTT”) service—occurs on a television screen using Roku, Samsung, or other similar device, not a computer or handheld mobile device.¹ We expect *Sling TV* users to view the service using patterns similar to DISH World users. Therefore, we do not project that a significant amount of customers will subscribe to *Sling TV* if they rely solely on their mobile broadband network for viewing video services. Indeed, we have found that a very small percentage of DISH World and *Sling TV* viewing occurs on a mobile broadband network, usually by consumers attempting to access short clips of programming.

¹ See DISH Network Corporation Petition to Deny, MB Docket 14-57, Declaration of Roger J. Lynch at ¶ 21 (Aug. 25, 2014).

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5. We thus advertise mobile broadband as an adjunct viewing option to increase the attractiveness of the *Sling TV* offering, but not as a primary use of the service. Among other things, data cap constraints on mobile wireless networks inhibit the ability of long-form viewing of *Sling TV* on 3G and 4G-reliant mobile devices.

6. I also believe Comcast/TWC will have the ability to thwart competing OTT services that rely on its network. As I explained in my Declaration, Comcast can discriminate against certain Internet Protocol packets using deep packet inspection, jitter, port-blocking, and other means. The communication protocols used on the Internet describe how packets contain source and destination addresses; source addresses can usually be linked to a specific website or a specific video service, such as DISH World or *Sling TV*. With the information available from inspecting and analyzing their customer's communications, Comcast/TWC could choose to prefer or to delay certain packets over others, and thus, certain streams of content or certain applications over others.²

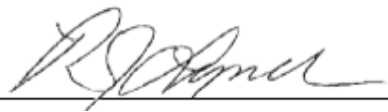
² *Id.* at ¶ 70.

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* * *

The foregoing declaration has been prepared using facts of which I have personal knowledge or based upon information provided to me. I declare under penalty of perjury that the foregoing is true and correct to the best of my current information, knowledge, and belief.

Executed on March 25, 2015.



Roger Lynch
Executive Vice President
Advanced Technologies and International Group
CEO, *Sling TV*
DISH Network Corporation

Appendix C

**Supplemental Declaration:
Analysis of the FCC's Vertical Foreclosure and Nash Bargaining Models
Applied To The Proposed Comcast-Time Warner Cable Transaction**

William P. Zarakas
Principal, The Brattle Group

March 25, 2015

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I. Introduction

1. In my December 2014 declaration, I commented on the vertical foreclosure and Nash bargaining models presented by Drs. Rosston and Topper in their September 2014 report. Specifically, I disagreed with the conclusion advanced by Drs. Rosston and Topper that the merger of Comcast with TWC “will not increase Comcast’s incentive to foreclose access to or raise prices of programming to rival MVPDs.”¹ I found that simply extending the duration of foreclosure within the Rosston-Topper model would make a foreclosure strategy profitable to Comcast-TWC in a {{ }} of cases.²

2. As I discussed in my December declaration, the Rosston-Topper vertical foreclosure model included numerous inputs and assumptions that I did not modify at that time. I used both the vertical foreclosure model provided by Drs. Rosston and Topper as well as the assumptions that they applied; I altered only the duration of foreclosure. In this declaration, I examine several of those key assumptions, and make recommendations concerning the appropriate values to use for profit and churn in the model.

3. I also adjust the vertical foreclosure model so that it fully accommodates multi-period foreclosures, as recommended by Drs. Rosston and Topper at the recent FCC Economic Analysis Workshop.³ The vertical foreclosure model that was provided by Drs. Rosston and Topper was specified for a single period (i.e., one month) of foreclosure, and was thus not suitable for multi-period analysis. I updated the model so that subscribers gradually depart from the foreclosed rival MVPD and are acquired by Comcast-TWC via the diversion rate at an equally gradual rate.⁴

¹ Rosston-Topper Report at paragraph 5.

² As used here, “cases” refers to the combination of markets and rival MVPDs. Recall that there are five rival MVPDs (DISH, DirecTV, AT&T, Verizon and RCN), and five O&O markets, two RSN markets and one national cable market under review in this case. Thus, $5 \times 8 = 40$ less markets in which rivals do not provide service ($5 \text{ O\&O markets} + 2 \text{ RSN markets} = 33$). In my December declaration, I found that a six month foreclosure strategy would be profitable to Comcast-TWC in {{ }} of 33 cases ({{ }} combinations of rival MVPDs and O&O markets, in {{ }} cases with respect to the national cable market, and in {{ }} combinations of rival MVPDs and RSN markets). December declaration, {{ }}.

³ Meeting at the FCC on January 30, 2015, Panel 3.

⁴ I followed the convention included in the Israel and Katz July Report at footnote 20. Economic Analysis of the Proposed Comcast-NBCU-GE Transaction, July 20, 2010, Mark Israel and Michael L.

Even though this resulted in higher costs associated with a multi-period foreclosure strategy, my updated analysis confirms that Comcast-TWC would find it profitable to engage in a six month foreclosure strategy in the {{ }} of cases analyzed.

4. A key element of the vertical foreclosure analysis concerns the level of profit that Comcast-TWC can expect to realize from customers acquired from foreclosed rivals. I modified the profit per residential video subscriber assumption used by Drs. Rosston and Topper from their {{ }} for each DMA market, consistent with the FCC's approach in its review of the Comcast-NBCUniversal transaction.⁵ Moreover, in their September Report, Drs. Rosston and Topper only considered the revenue potential from incremental video revenues when calculating profits, instead of including the profits that Comcast-TWC will realize from new video subscribers who also may receive data and/or voice services.⁶ This is clearly inconsistent with the Commission's approach in its review of the Comcast-NBCUniversal transaction. Consistent with Commission precedent, I thus calculated profit to reflect the "revenues generated from the additional subscription fees and advertising that accrue to Comcast in its capacity as a video, broadband, and telephony distributor, less the variable costs of serving these new subscribers, divided by the number of new subscribers."⁷ Additionally, I modified the churn assumption used by Drs. Rosston and Topper from a four-stage churn-back to a two-stage churn-back, consistent with the approach taken by the FCC in its review of the Comcast-NBCUniversal transaction.⁸ I used the same monthly churn rate

Continued from previous page

Katz. (Israel and Katz July 2010 Report). Drs. Rosston and Topper did not include this gradual departure in the analysis presented in their February 20, 2015 Response To Arguments and Questions on the Commission's Foreclosure and Bargaining models. Drs. Rosston and Topper assumed that for a six month foreclosure all departing customers will leave the rival MVPD in the first month of the foreclosure and, via the diversion rate, Comcast-TWC will acquire customers from foreclosed rivals in the first month. Calculated critical departure rates would be *lower* if I used the Rosston-Topper approach.

⁵ Comcast-NBCUniversal Order, Appendix B at paragraph 22.

⁶ They also subtracted out more than the variable costs associated with serving these new customers. These additional costs, including {{

}}

⁷ Comcast-NBCUniversal Order, Appendix B at paragraph 8.

⁸ Comcast-NBCUniversal Order, Appendix B at paragraph 24.

methodology that Drs. Rosston and Topper used to calculate their four-stage rates when I calculated the two-stage rates, even though these churn levels may overstate realistic rates.⁹ I also corrected a computational error made by Rosston and Topper in calculating recurring expenses.

5. My updated analysis indicates that it is profitable for Comcast-TWC to engage in a multi-period foreclosure strategy for the {{ }} of cases ({{ }} of the 33) analyzed, consistent with the conclusions presented in my earlier declaration. In addition, my updated analysis also indicates that Comcast-TWC would find it profitable to engage in much shorter term foreclosure strategies, lasting only one month (in {{ }} of these cases). Thus, my analysis demonstrates that foreclosure is profitable in many markets, even if one adopts the narrow focus used by Drs. Rosston and Topper on foreclosures that last for only one month. These updated results primarily reflect the change in the profit assumption alone;¹⁰ re-specifying the vertical foreclosure model to accommodate multiple periods did not have an impact on the analysis of single period foreclosures.

6. The stark difference between the results of my updated analysis and the results presented by Drs. Rosston and Topper is readily apparent. By assuming {{

}}), Drs. Rosston and Topper made it nearly impossible for the benefits of a foreclosure strategy to overcome the associated costs. Drs. Rosston and Topper also presented the results associated with analyses reflecting other definitions of profit in response to requests from the Commission. However, they did not

⁹ Drs. Rosston and Topper calculated the churn-back rate for the first month (following the end of foreclosure) to be {{ }} churn rate for customers prone to change providers (designated as “movers” by Drs. Rosston and Topper). Rosston-Topper September 2014 Report, Technical Appendix, at paragraph 25. The source for these data is not precisely clear. However, I assume that the churn rates for such movers were based on data provided in {{

}}. Doubling this monthly churn rate, as Drs. Rosston and Topper represent was done by the Commission in the Comcast-NBCUniversal case, results in a monthly churn rate of {{ }}.

¹⁰ They also reflect the impact of using a two-stage churn-back rate, instead of the four-stage churn-back rate used by Drs. Rosston and Topper.

present a single scenario which matched the profit specification that the Commission applied in its review of the Comcast-NBCUniversal transaction. In this declaration, I demonstrate that Comcast-TWC would find it profitable to engage in foreclosure strategies in both the short term and the long term when profit is defined consistent with what was used by the Commission in prior vertical foreclosure analyses.

7. The results of the vertical foreclosure analysis also indicate that Comcast-TWC would find it profitable to foreclose on rival MVPDs that are wireline-based even more so than it would find it profitable to foreclose on its DBS-based rivals. This is primarily because the FCC discounted the diversion rates for DBS-based MVPDs (i.e., DISH and DirecTV).¹¹ The discounted diversion rate for DISH and DirecTV means that Comcast-TWC gains proportionally fewer customers from DBS-based rivals than wireline-based rivals, thereby mitigating the profit potential associated with foreclosing on either of these two MVPDs.¹² Even under this assumption (i.e., applying a discounted diversion rate), my vertical foreclosure model indicates that Comcast-TWC would find it profitable to foreclose on its DBS-based rivals in {{ }} out of the 15 cases analyzed for a one month foreclosure.¹³ Comcast may find it more effective to foreclose on DBS-based rivals than is indicated by the model. Accordingly, I have conducted the vertical foreclosure analysis without discounting the diversion rate for DBS-based rivals. Under this scenario, Comcast-TWC would find it profitable to foreclose its DBS-based rivals in {{ }} out of the 15 cases analyzed for a one month foreclosure, and in {{ }} out of the 15 cases analyzed for a six month foreclosure.¹⁴ In aggregate under this scenario (i.e., for wireline-based rivals and

¹¹ The specific level of discount is redacted in the FCC's Comcast-NBCUniversal Order (Appendix B at paragraphs 14-15). Drs. Rosston and Topper reduced the diversion rates for the DBS-based rivals by 50% in their analysis. Rosston-Topper Report, Technical Appendix, at paragraph 28. I used the same discount for purposes of my analysis, but note that it may be unreasonably high.

¹² The logic behind the FCC's opinion (in the Comcast-NBCUniversal case) was that "subscribers view the two DBS providers as closer substitutes and therefore customers leaving a DBS provider would be more likely to switch to the other satellite service than to Comcast." Comcast-NBCUniversal Order, Appendix B at paragraph 14.

¹³ See Tables 9A and 9B which indicate that it is profitable for Comcast-TWC to foreclose DirecTV in {{ }} and DISH and DirecTV in {{ }}. There are two DBS-based MVPDs (DISH and DirecTV). They operate in the five O&O markets, the national cable network market, and in the CSN-New England RSN market. DISH does not carry TWC SportsNet. The total cases equals 10 (2 rivals x 5 O&Os) plus 2 (2 rivals x 1 national cable network) plus 3 (2 rivals x 1 CSN-NE) + (1 rival x TWC SportsNet) = 15.

¹⁴ See Tables 11A, 11B, 12A, and 12B.

undiscounted DBS-based rivals), Comcast-TWC would find it profitable to engage in a one month foreclosure strategy in {{ }} out of the 33 cases analyzed, and find it profitable to engage in a six month foreclosure strategy in {{ }} cases.¹⁵

8. I also updated the Nash bargaining analysis to reflect the profit calculations described above. The higher level of profit resulted in even more pervasive predicted price increases (at levels greater than five percent) than was the case in my earlier declaration. The updated results indicate that price increases (from Comcast-TWC) are predicted for: {{ }} of cases in the O&O markets under the assumption of a departure rate equal to {{ }} (i.e., the departure rate estimated to follow a one month foreclosure) and {{ }} of cases in the O&O markets under the assumption of a departure rate equal to {{ }} (i.e., the departure rate estimated to follow a six month foreclosure).

9. Additionally, in this declaration I respond one-by-one to the criticisms leveled by Drs. Rosston and Topper in their February 20, 2015 Response. Specifically, this Response criticized the analysis I presented in my initial declaration as well as comments I made during the FCC's Economic Analysis Workshop. I demonstrate why their criticisms are misguided.

10. The remainder of my declaration is organized as follows. In Section II, I review the profit and churn assumptions included in the vertical foreclosure model. I discuss the re-specification of the vertical foreclosure model to account for multi-period foreclosures in Section III. I provide the updated results of the vertical foreclosure model in Section IV and the updated results of the Nash bargaining model in Section V. I respond to all of the criticisms leveled by Drs. Rosston and Topper against my initial declaration and subsequent comments in Section VI. I then provide conclusions concerning model results in Section VII.

II. Vertical Foreclosure Model – Key Assumptions

A. PROFIT

11. The profit per new subscriber variable in the vertical foreclosure model (π) “consists of revenues generated from the additional subscription fees and advertising that accrue to Comcast in its capacity as a video, broadband and telephony distributor, less the variable costs of serving these new subscribers, divided by the number of new subscribers.”¹⁶ The profit variable is an important component of the benefits side of the vertical foreclosure model. Recall that benefits

¹⁵ See Tables 11A, 11B, 12A, and 12B.

¹⁶ Comcast-NBCUniversal Order, Appendix B at paragraph 8.

equal the number of new subscribers that Comcast expects to acquire as a result of foreclosing on a rival multiplied by the profit it expects to realize per new subscriber.

12. Drs. Rosston and Topper estimate profit per new subscriber using a combination of reports and presentations provided by Comcast.¹⁷ First, they estimate recurring revenues for new residential video subscribers based on financial reports for each region provided by Comcast that segment revenues into product service groups.¹⁸ Second, Drs. Rosston and Topper estimate the recurring expenses for new residential video subscribers by adding together the expenses for {{

}}.¹⁹ Drs. Rosston and Topper made an error in calculating recurring expenses. Specifically, {{ }} are the expense areas that sum to {{ }}. Drs. Rosston and Topper included both {{ }} in their estimate of recurring video expenses. Based on my understanding of the expenses that they intended to include (and my understanding of {{ }}), they should have included {{ }} instead. In total, the budgeted expenses for {{ }} and those for {{ }}. Adding expenses for {{ }} and overstate recurring expenses by {{ }}.

¹⁷ Drs. Rosston and Topper rely on five different sources of information: {{

}}.

¹⁸ These reports have been referred to as {{

}}.

¹⁹ These are {{ }}. Drs. Rosston and Topper did not include {{ }} in their estimate of recurring expenses.

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13. Subtracting the above recurring video expenses (as calculated by Drs. Rosston and Topper) from recurring revenues results in a monthly profit for residential video subscribers of {{ }} on average across Comcast's national footprint.²⁰ Correcting for the double counting error discussed above results in an increase in Drs. Rosston and Topper's average national video profit calculation from {{ }}.¹⁹

14. Third, Drs. Rosston and Topper {{

}}).

15. In addition, Drs. Rosston and Topper estimated a separate profit for residential video subscribers during the first month of their tenure with Comcast. To accomplish this, Drs. Rosston and Topper subtracted the cost of acquiring new customers from the already reduced level of first year monthly profit. Drs. Rosston and Topper estimated that Comcast's cost of acquiring new customers, also referred to as the subscriber acquisition cost, was {{ }} and included various {{ }}. This resulted in a {{ }} for new residential video subscribers during the first month that they were a Comcast customer, on average equal to {{ }}.²²

²⁰ Drs. Rosston and Topper's national average monthly profit is an average of the average profit across Comcast's 16 regions, weighted by the number of Comcast residential video subscribers in that region.

²¹ Specifically, Drs. Rosston and Topper estimate the average monthly revenues per user (ARPU) for Comcast's residential video subscribers of different tenures, based on information included in {{ }}.

²² The average monthly profit for new residential video subscribers for the first month that the subscriber becomes a Comcast customer is calculated as: {{ }}.

16. Drs. Rosston and Topper also calculated profits separately for each of Comcast's regions.²³ They calculated that the average monthly profit per residential video subscriber ranged from a low of {{ }} in the {{ }} region to a high of {{ }} in the {{ }} region. Certain elements in their profit calculations, particularly {{ }}, can be readily assigned to specific geographies. However, many of the cost elements that are used in their calculations are part of larger pools of shared and common costs, and are allocated by to the regions by Comcast.

17. The monthly profits estimated by Drs. Rosston and Topper are inappropriate to use in an update of the FCC's vertical foreclosure model for two primary reasons. First, the revenues that Drs. Rosston and Topper used to calculate monthly profits for residential video subscribers are significantly understated because they do not recognize that new video subscribers may also subscribe to voice and/or data services, which would serve to increase the profitability of acquiring such new customers. As referenced earlier, in the Comcast-NBCUniversal transaction the FCC was well aware of the difference between the profitability of video service and the profitability associated with acquiring additional video subscribers. The Commission specifically called for including "revenues generated from the additional subscription fees and advertising that accrue to Comcast in its capacity as a video, broadband and telephony distributor" in the determination of the profit level to include in the vertical foreclosure analysis.²⁴

18. Second, Drs. Rosston and Topper overstated the costs that should be included in the calculation of profit by using costs other than variable costs. As referenced earlier, the FCC defined the profit that should be included in the vertical foreclosure model as the revenues generated from new subscribers less the variable costs of serving them. Drs. Rosston and Topper defined the expenses associated with Comcast's {{

}}.²⁵

²³ Comcast's 16 regions are: Beltway; Big South; Chicago; California; Florida; Freedom; Greater Boston; Heartland; Houston; Keystone; Mile High; Mountain; Portland; Seattle; Twin Cities; and Western New England. The New York DMA is in the Freedom region; the Dallas-Ft. Worth DMA is in the Houston region; the Los Angeles and San Diego DMAs are in the California region; and the Hartford-New Haven DMA is in the Western New England region.

²⁴ Comcast-NBCUniversal Order, Appendix B at paragraph 8.

²⁵ February 5, 2015 Responses of Comcast Corporation to the Commission's Second Information And Data Request, Response 123.

19. I calculate monthly profit per residential video subscriber in four steps.²⁶ First, I estimate the average monthly revenue for residential video subscribers (also referred to as monthly average revenue per user or ARPU) for Comcast-TWC's regional markets. Second, I calculate the variable costs (other than those included in step three below) for Comcast-TWC to provide service to these customers. Third, I estimate Comcast-TWC's costs of: 1) acquiring these new customers (referred to as subscriber acquisition cost, or SAC) and 2) incremental equipment needed to provide services (referred to as customer premise equipment, or CPE). Finally, from average monthly revenues for residential video subscribers, I deduct monthly variable costs plus the amortized monthly costs of SAC and CPE.

1. Average Revenue Per Video Subscriber

20. A breakdown of Comcast's 2014 revenue from its residential video, voice, and data customers is provided in **Table 1**.²⁷ Revenues for each category come from customers who subscribe to a service on a stand-alone basis as well as those that receive the service as part of a bundle. The table indicates that, on average, Comcast receives just less than {{ }} per month from video subscribers, nearly {{ }} per month from voice subscribers, and about {{ }} per month from data subscribers.

21. A breakdown of the composition of Comcast's new residential customers is summarized in **Table 2**. The table shows seven possible ways that Comcast's customers receive services: video, voice, and data on a standalone basis, dual-plays of video + voice, of video + data, and of voice + data, and the triple play of video + voice + data. The table also shows the four categories of video customers: video only, video + voice, video + data, and the triple play of video + voice + data.

²⁶ I use information provided in {{ }}. To date, all the vertical foreclosure analyses found in Drs. Rosston and Topper's reports have used information provided in {{ }}.

²⁷ The table shows revenue and subscriber data for five regions, for all other regions, and nationally. Comcast tracks revenue and subscribers in 16 regions: Beltway; Big South; Chicago; California; Florida; Freedom; Greater Boston; Heartland; Houston; Keystone; Mile High; Mountain; Portland; Seattle; Twin Cities; and Western New England. The O&Os and RSNs under review are located in five regions: the New York DMA is in the Freedom region; the Dallas-Ft. Worth DMA is in the Houston region; the Los Angeles and San Diego DMAs as well as the TWC SportsNet RSN are in the California region; the Hartford-New Haven DMA is in the Western New England region; and the CSN-New England RSN is located in the Greater Boston region.

22. **Table 3** then derives the average monthly revenue that Comcast receives from its residential video customers in the five regions under study, for all other regions on average, and for Comcast nationally on average. As shown in the table, new residential video subscribers will subscribe to video only, video + voice, video + data, and triple play services in the proportions indicated in Table 2 and will have a monthly ARPU of approximately {{ }} on average. The residential video subscribers that Comcast gains from foreclosed wireline-based rivals (i.e., AT&T, Verizon, and RCN) will likely follow this same pattern. I use the average monthly ARPU that Comcast receives from its residential video subscribers (as shown in Table 3) in calculating the profit that Comcast-TWC can expect to realize from new customers from foreclosed wireline-based rivals.

23. The residential subscribers that Comcast gains from foreclosed DBS-based rivals (i.e., DISH and DirecTV) will most likely follow a slightly different pattern of use. Pre-foreclosure, those customers received video service from a DBS-based rival but received voice and/or data services from other providers. In many cases, these customers may already receive data services from Comcast. Thus, the incremental ARPU that Comcast would realize after acquiring customers from foreclosed DBS-based rivals is less than would be the case for customers acquired from foreclosed wireline-based rivals. I account for this by adjusting the composition of new customers to reflect Comcast's share of the data market at the national level (equal to {{ }}).²⁸ The adjusted customer composition is shown in **Table 4**, and the monthly ARPU that Comcast could expect to receive from new customers acquired from foreclosed DBS providers is provided in **Table 5**.

2. Variable Costs

24. Programming fees are the only variable cost that MVPDs must incur in order to provide service to a new video customer. Comcast confirmed this view in its Responses to the Commission's Second Information and Data Request, Response 123: "[[

]]²⁹ Comcast

²⁸ William T. Lake, Memorandum to Marlene H. Dortch, "Applications of Comcast Corporation, Time Warner Cable Inc., Charter Communications Inc., and SpinCo for Consent to Assign Licenses or Transfer Control of Licenses, MB Docket No. 14-57," December 9, 2014, {{ }}.

²⁹ February 5, 2015 Responses of Comcast Corporation to the Commission's Second Information and Data Request, Response 123.

also indicated that the costs of {{

}}.³⁰

25. Comcast reported its 2014 programming expenses in {{ }}. Total programming expenses as well as programming expenses per residential video subscriber are shown in Table 6.

3. SAC and CPE

26. The cost of acquiring new customers and the cost of equipment at the customer premises also need to be considered in calculating the profit that Comcast can expect to realize from customers acquired from foreclosed rivals. Drs. Rosston and Topper have represented that Comcast incurs various advertising, marketing, and sales costs in efforts to acquire new customers,³¹ which add up to {{ }} per connection.³² In addition, Comcast incurs costs in connecting new customers to its system, which includes the cost of installation and overhead.³³

³⁰ February 5, 2015 Responses of Comcast Corporation to the Commission's Second Information and Data Request, Response 123.

³¹ September 11, 2014 Responses of Comcast Corporation to the Commission's Information and Data Request, 4(k). {{

}}. Details concerning the nature of the advertising, sales, and marketing expenditures and how they were specifically associated with acquiring new customers were not provided.

³² {{

}}

³³ Part of these costs was offset by installation revenues that Comcast receives from newly connected customers. The costs for all of Comcast's installation related costs (i.e., installations and overheads for connecting video, data, and/or voice customers) is approximately {{ }} per new connection. Drs. Rosston and Topper {{

}}.

The total cost of acquiring new customers is {{ }} per connection.³⁴ A connection is associated with a new video, voice, and/or data service; a subscription to multiple services by a single customer counts as multiple connections. Insufficient information was provided for me to be able to determine whether all of these costs should be included in a calculation of the cost of acquiring new customers. However, with this qualification, I include these costs in calculating the profit level used in the vertical foreclosure analysis.

27. I amortized the total cost of acquiring new customers, following the approach used by the Commission in its review of the News Corp-DirecTV transaction.³⁵ There, the Commission recognized that subscriber acquisition costs are one-time expenses associated with the acquisition of a new customer, and adopted the “standard method, used by both Applicants and commenters, of amortizing those costs over the length of time that the subscriber is expected to stay with DirecTV.”³⁶

28. I amortized the regional and national subscriber acquisition costs ({{ }} per new connection at the national level) using a five year life. [[
]].³⁷

However, Comcast’s {{ }} indicates that nearly {{ }} of Comcast customers have a tenure of at least {{ }}³⁸ I included the amortized monthly cost of {{ }} per connection in the calculation of monthly profit that

³⁴ The net acquisition cost per subscriber presented here is slightly different than the cost reported in Drs. Rosston and Topper’s analysis {{ }}. The difference is due to the fact that Drs. Rosston and Topper used {{

}}.

³⁵ Before the Federal Communications Commission In the Matter of General Motors Corporation and Hughes Electronics Corporation, Transferors And The News Corporation Limited, Transferee, For Authority to Transfer Control. MB Docket No. 03-124, January 14, 2004, (News Corp. Order) Appendix D, paragraph 3.

³⁶ News Corp. Order, Appendix D, paragraph 3.

³⁷ In Comcast’s September 2014 Response to the Commission’s Information and Data Request Comcast states: “As discussed with the FCC, [[
]]” See, September 11, 2014 Responses of Comcast Corporation to the Commission’s Information and Data Request, Response 7.

³⁸ {{
}}

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Comcast receives from its residential video customers.³⁹ For a triple play subscriber (i.e., one connection for video, one for data, and one for voice), the amortized monthly SAC would be {{ }}.⁴⁰

29. Drs. Rosston and Topper also used information provided by Comcast in its {{

}}⁴² I used the costs of {{ }} per home
for video CPE and {{ }} per home for data/voice CPE in calculating the monthly profit that Comcast-TWC can expect to realize from newly acquired residential video subscribers.

30. I applied the same method for amortizing CPE that Drs. Rosston and Topper used in their September 2014 and February 2015 reports. Drs. Rosston and Topper amortized customer premise equipment using a {{ }} discount period and a monthly discount rate of {{ }}.⁴³ The amortized value of video CPE is {{ }} and the amortized value of data/voice CPE is {{ }}.⁴⁴

³⁹ The amortization factor is: {{
}}

⁴⁰ The difference between {{ }} is due to rounding.

⁴¹ Rosston-Topper September 2014 Report, Technical Appendix, at footnote 35. See also, {{
}}.

⁴² {{
}}.

⁴³ Drs. Rosston and Topper state that they use a {{
}}. Rosston-Topper Report, Technical Appendix, at paragraph 40.

⁴⁴ The amortization factor is: {{
}}.

4. Profit

31. Consistent with the FCC’s guidance in the Comcast-NBCUniversal transaction, the profit that Comcast-TWC can expect to realize from new customers acquired from foreclosed rivals is calculated as: “revenues generated from the additional subscription fees and advertising that accrue to Comcast in its capacity as a video, broadband and telephony distributor, less the variable costs of serving these new subscribers, divided by the number of new subscribers.”⁴⁵ As discussed above, variable costs include programming expenses and the amortized costs of subscriber acquisition and customer premise equipment.

32. The monthly profits resulting from Comcast-TWC’s acquisition of new video subscribers are provided in **Table 7** (for wireline-based rivals) and in **Table 8** (for DBS-based rivals). The profit from newly acquired residential video subscribers that Comcast-TWC can expect to realize from foreclosing on rival MVPDs is different for wireline-based and DBS-based rivals because, as discussed above, Comcast-TWC can expect lower incremental ARPU from new customers acquired from DBS-based rivals than it would from wireline-based rivals.

33. The monthly profit per residential video subscriber numbers shown in Tables 7 and 8 are dramatically different from the profit numbers that Drs. Rosston and Topper used in their vertical foreclosure analysis. For example, Table 7 indicates that the profit Comcast-TWC could expect to realize from new residential video subscribers (from foreclosed wireline-based rivals) in {{ }} is approximately {{ }}, which is significantly larger than the average profit calculated by Drs. Rosston and Topper for residential video subscribers in {{ }} ({{ }}).⁴⁶ The average profit calculated by Drs. Rosston and Topper is much lower than the profits that I calculated in Tables 7 and 8 because: 1) they do not include the revenues that Comcast stands to gain from bundled video sales and 2) they deduct costs other than variable costs from monthly revenues. However, their low level of average profit is effectively further reduced when they apply {{ }} to specific time periods: a {{

}}.⁴⁷

⁴⁵ Comcast-NBCUniversal Order, Appendix B at paragraph 8.

⁴⁶ Profits for subscribers in the {{ }} are based on {{ }}”

⁴⁷ {{ }} profits in the first month are calculated as {{ }}

B. CHURN-BACK

34. The vertical foreclosure model allows for new customers acquired by Comcast as a result of its foreclosure on a rival MVPD to return, or churn-back, to the rival MVPD after programming has been restored. This variable has a significant impact on the calculation of the critical departure rate because it reduces the benefits that may accrue to Comcast. Including a higher churn-back rate results in Comcast retaining fewer of its newly acquired customers and, thus lowers the total benefits that Comcast would expect to realize.

35. The FCC applied a two-stage approach to churn-back in the vertical foreclosure model used in the review of the Comcast-NBCUniversal transaction. Specifically, the FCC used the Applicant's "upper bound assumption" concerning churn-back for the first month following the end of foreclosure (although the specific method for estimating the first month churn-back is redacted in the FCC's Order).⁴⁸ Drs. Rosston and Topper represent that, in calculating the churn-back rate for the first month following the end of foreclosure, the Commission doubled Comcast's monthly churn rate for "movers."⁴⁹ The Commission then applied the average churn rate for Comcast customers for months two and onward (following the end of foreclosure) in its vertical foreclosure model.⁵⁰ Using Comcast's churn-by tenure data, the average monthly churn of residential video customers {{ }}.⁵¹

36. Drs. Rosston and Topper use a four-stage approach to the churn variable in their version of the vertical foreclosure model. Specifically, in their model: {{ }} of new customers will churn back during the first month following the end of foreclosure; {{ }} of new customers who are still Comcast customers during months two through twelve will churn back to the rival MVPD during each of those months; {{ }} of new customers who are still Comcast customers during months 13 through 24 will churn back to the rival MVPD during each of those months; and {{ }} of new customers who are still Comcast customers during months 25 and beyond will churn back to the rival MVPD during each of those months.⁵²

⁴⁸ Comcast-NBCUniversal Order, Appendix B at paragraph 24.

⁴⁹ Rosston-Topper September 20, 2014 Report, Technical Appendix at paragraph 25.

⁵⁰ Comcast-NBCUniversal Order, Appendix B at paragraph 24.

⁵¹ {{

}}.

⁵² Rosston-Topper Report, Technical Appendix at paragraph 44.

37. I have not been able to identify the calculation of churn for movers in the work papers provided by Drs. Rosston and Topper. However, the churn rates by tenure are represented in the {{ that Drs. Rosston and Topper refer to elsewhere in their report. The average of the monthly churn rate for residential customers of {{

}}.⁵³ I assume that this is the method used by Drs. Rosston and Topper to determine the churn-back rate for the first month following the end of foreclosure.

38. {{

}}

39. For the current analysis, I convert the four-stage churn used by Drs. Rosston and Topper to a two-stage churn, consistent with the approach used by the Commission in its review of the Comcast-NBCUniversal transaction. Using the churn data provided by Drs. Rosston and Topper, I apply {{ for the churn-back rate for the first month following the end of foreclosure and {{ for the churn-back rate for months two and onward. However, as shown above, it may be appropriate to use a lower churn-back rate {{ for the first month following the end of foreclosure. This change would further reduce the critical departure rate as Comcast's benefits would increase with more subscribers staying.

III. Model Specification

40. In my December 21, 2014 Declaration, I presented calculations of critical departure rates using the vertical foreclosure model provided by Drs. Rosston and Topper. I found that their model was generally consistent with the formula for critical departure rate (d^*) within the vertical foreclosure framework summarized in the FCC's Comcast-NBCUniversal Order.⁵⁵ Drs. Rosston and Topper applied a one month duration of foreclosure in their analysis and concluded that the Comcast-TWC transaction did not present any possibility of harm to consumers because the critical departure rate calculated in their model for a one month foreclosure duration was

⁵³ {{ }}

⁵⁴ {{ }}

⁵⁵ Comcast-NBCUniversal Order, Appendix B at paragraph 10.

{{ }} than their estimate of departure experience. I varied the duration of foreclosure in the Rosston-Topper model and demonstrated that by foreclosing on its rivals for more than one month, Comcast-TWC would indeed find it profitable to engage in a foreclosure strategy in certain O&O, RSN, and national cable markets.

41. During the FCC’s Economic Analysis Workshop (January 30, 2015), Drs. Rosston and Topper stated that I did not include the full impact of the cost of foreclosure in my vertical foreclosure analysis. That is, Drs. Rosston and Topper clarified that their model was not specified to consider multi-period foreclosures.⁵⁶ I have subsequently adjusted the formula in the vertical foreclosure model to allow for multi-period foreclosures. The equation for critical departure rates for single and multi-period foreclosures is provided in **Appendix A**.

42. The updated vertical foreclosure model is specified so that departing customers gradually leave the foreclosed rival over the course of the foreclosure period and, via the diversion rate, also gradually become customers of Comcast-TWC.⁵⁷ The number of customers departing the foreclosed MVPD reaches its peak at the end of the foreclosure period; the same is the case for the former customers of the foreclosed MVPD who become customers of Comcast-TWC. The effect of this adjustment is that, for multi-period foreclosures and for a given set of assumptions, the net present value (NPV) of the cost of foreclosure is {{ }} than was previously estimated and the NPV of the corresponding benefits is {{ }}.

43. Updating the vertical foreclosure model to accommodate multi-period foreclosures did not affect the analysis of single period foreclosures; i.e., the updated results presented in this declaration for a foreclosure lasting one month reflect only the impact of adopting the assumption concerning monthly profit per residential video subscriber and a two-stage churn-back. However, the updated results concerning the profitability (to Comcast-TWC) of foreclosing rival MVPDs for six months reflect the combined effects of 1) model re-specification as well as 2) adoption of the profit per residential video subscriber and two-stage churn-back assumptions discussed above. Nevertheless, they still confirm that foreclosure would be profitable in many markets using a six month time horizon.

⁵⁶ The equation for critical departure rates provided in the FCC’s Comcast-NBCUniversal Order (Appendix B at paragraph 10) also is specified for a single-period foreclosure.

⁵⁷ I applied the convention used by Drs. Israel and Katz in their analysis of multi-period foreclosure with respect to the Comcast-NBCUniversal transaction. Specifically, over the course of a six month foreclosure, the number of departures is “somewhat larger in the early months of the dispute than in later months, with 6/21 of the departures occurring in the first month, 5/21 in the second month, and so on through 1/21 in the sixth month.” Israel and Katz July 2010 Report, at footnote 20.

IV. Updated Vertical Foreclosure Analysis

44. The updated results of the vertical foreclosure analysis are provided in **Tables 9A** and **9B** for one month foreclosures and in **Tables 10A** and **10B** for six month foreclosures. Tables 9A and 10A provide the results of the vertical foreclosure analysis concerning the five O&O markets; Tables 9B and 10B provide the results associated with the two RSN and national cable network markets. The top half of the table provides the critical departure rates calculated using the assumptions discussed earlier in this declaration; the lower half of the tables provides the result of the subtraction of critical departure rates from the estimated actual departure rates.⁵⁸ Positive numbers indicate that Comcast-TWC would find a foreclosure strategy to be profitable; negative numbers indicate that such a strategy would not be profitable.

45. The updated analysis demonstrates that Comcast-TWC would find it profitable to engage in a six month foreclosure strategy in {{ }} cases. Furthermore, Comcast-TWC would find it profitable to undertake a one month foreclosure in {{ }} cases (which overlap with the {{ }} cases for which a longer term foreclosure strategy is also profitable).

46. The results of the foreclosure analysis also indicate that Comcast-TWC would find it more profitable to foreclose on rival MVPDs that are wireline-based than it would find it profitable to foreclose its DBS based rivals. This is primarily because the FCC discounted the diversion rates for DBS-based MVPDs (i.e., DISH and DirecTV).⁵⁹ The discounted diversion rate for DISH and DirecTV means that Comcast-TWC would stand to gain fewer customers from

⁵⁸ As discussed in my initial declaration, the actual departure rates were estimated using a difference-in-differences regression analysis. The results of the regression concerning the one month black-out period are provided in the Rosston-Topper September 2014 Report, Table III.C.9. I provided the results of the regression concerning the six month black-out period in my initial declaration, Table 10. Also, Drs. Rosston and Topper assume that the actual departure rate applied to the RSN markets and national cable market is only {{ }} of the departure rate estimated in the difference-in-differences regression analysis. That is, they estimate the actual departure rate for a one month foreclosure applicable to O&O markets to be {{ }}, and {{ }} for the RSN and national cable markets. I am uncertain as to the accuracy of their representations in this regard, but apply this same approach for purposes of this report. Following from this, the actual departure rate estimated for a six month foreclosure was {{ }}, which I apply to the O&O markets, and I apply {{ }} to the RSN and national cable network markets.

⁵⁹ The specific level of discount is redacted in the FCC's Comcast-NBCUniversal Order (Appendix B at paragraphs 14-15). Drs. Rosston and Topper reduced the diversion rates for the DBS based rivals by 50% in their analysis. Rosston-Topper September 2014 Report, Technical Appendix, at paragraph 28. I used the same discount for purposes of my analysis, but note that it appears unnecessarily high.

DBS-based rivals than wireline-based rivals, thereby mitigating the profit potential associated with foreclosing on either of these two MVPDs.⁶⁰ Nonetheless, the vertical foreclosure model results presented above indicate that Comcast-TWC would find it profitable to foreclose its DBS-based rivals for one month in {{ }} out of 15 cases analyzed, even with a discounted diversion rate.

47. I have also conducted the vertical foreclosure analysis without discounting the diversion rate for DBS-based rivals. The results of this analysis are provided in **Tables 11A** and **11B** for one month foreclosures and in **Tables 12A** and **12B** for six month foreclosures. As indicated in the tables, under this scenario, Comcast-TWC would find it profitable to foreclose on its DBS-based rivals in {{ }} out of the 15 cases analyzed for a one month foreclosure, and in {{ }} out of the 15 cases analyzed for a six month foreclosure.

48. The results presented above differ considerably from those presented by Drs. Rosston and Topper, and can be explained by two elements of their treatment of the profit assumption. First, in calculating the monthly revenue that can be expected from each new video subscriber, Drs. Rosston and Topper use revenues associated with video services only, instead of the revenues “that accrue to Comcast in its capacity as a video, broadband and telephony distributor,” as instructed by the Commission. They have completely excluded any incremental revenues that could come from new customers coming from foreclosed DBS rivals, and they have used a composition (of services) for customers coming from foreclosed wireline-based rivals that is more skewed to stand-alone video services than I employed in my analysis, as shown in Table 4. The composition of services that they apply to foreclosed wireline-based subscribers is actually much closer to the one I apply to foreclosed DBS-based subscribers.

49. Second, from this lower revenue level, they deduct expenses in excess of variable costs. This combination understates average profit and therefore over-states the critical departure rates calculated in the vertical foreclosure model.

50. I conducted a sensitivity analysis in order to better understand the difference between my results and the results presented by Drs. Rosston and Topper. First, I applied the methodology summarized in Tables 3 and 5 to calculate the revenues that Comcast-TWC could expect to realize from new customers from foreclosed rivals. Second, I followed Drs. Rosston and Toppers methodology for calculating the costs to be deducted from revenues. That is, I deducted both

⁶⁰ The logic behind the FCC’s opinion (in the Comcast-NBCUniversal case) was that “subscribers view the two DBS providers as closer substitutes and therefore customers leaving a DBS provider would be more likely to switch to the other satellite service than to Comcast.” Comcast-NBCUniversal Order, Appendix B at paragraph 14.

variable and step costs in order to be consistent with their methodology – even though, as I discussed, step costs are not variable costs. I also corrected for the computational error that Drs. Rosston and Topper made in calculating the cost of {{ }}. Third, I used the resulting average profit numbers in my re-specified vertical foreclosure model. The model results indicated that Comcast-TWC would find it profitable to engage in a six month foreclosure strategy in {{ }} cases. The difference between these foreclosure results and the results that I presented in my updated analysis, above, primarily reflects Drs. Rosston and Topper inclusion of step costs.

51. Nonetheless, Drs. Rosston and Topper’s results as presented in their September 2014 Report are dramatically different from the results that I presented above. This is largely due to the {{ }} that Drs. Rosston and Topper incorporate into their vertical foreclosure model. As discussed earlier, average profit was {{ }}. This makes it so Comcast-TWC would {{ }} find it profitable to engage in a foreclosure strategy, irrespective of the duration of foreclosure considered. Absent this structure of the profit variable, Drs. Rosston and Topper’s vertical foreclosure analysis would indicate a significant frequency of potentially profitable foreclosure, as I demonstrated above

V. Nash Bargaining Model

52. The Nash bargaining model concerns predictions of price increases and involves the departure rate (d), diversion rate (α), and profit (π) variables. The re-specification of the vertical foreclosure model to accommodate multi-period foreclosures, discussed above, does not affect the Nash bargaining model. However, adopting a more realistic assumption concerning the profit per residential video subscriber will have an impact on model results. **Tables 13 through 17** update **Tables 6 through 10** provided in my initial declaration. They provide the predicted percent changes in price for the: O&O markets following a one month foreclosure (departure rate = {{ }}); RSN and national cable network markets following a one month foreclosure (departure rate = {{ }}); O&O markets following a six month foreclosure (departure rate = {{ }}); and RSN and national cable network markets following a six month foreclosure (departure rate = {{ }}).

53. **Table 13** indicates that there would likely be {{ }} cases of price increases in excess of five percent from the vertically integrated Comcast-TWC when the departure rate is estimated to be low; e.g., at the {{ }} level associated with a one month foreclosure. However, the Nash bargaining model predicts that price increases in excess of five percent will be realized in {{ }} of the five O&O markets when the departure rate is higher (**Table 15**). **Table 17** summarizes the number of rival MVPDs in the five O&O markets for which price increases of greater than five percent are predicted. As indicated in the table, over {{ }} of rival MVPD-O&O markets are predicted to experience a price increase of five percent or higher when departure rates are at the

3.0% level, and {{ }} of rival MVPD-O&O markets are predicted to experience this level of price increase when departure rates are equal to 5.0%. These levels of price increases are {{ }} than those presented in my initial declaration.⁶¹

VI. Rebuttal To Drs. Rosston and Topper

54. In their February 20, 2015 Response, Drs. Rosston and Topper leveled four areas of criticism concerning my December declaration and statements that I made in the FCC's January 2015 Economic Analysis Workshop. I respond to each of these below.

A. MODEL SPECIFICATION

55. First, Drs. Rosston and Topper assert that 1) the vertical foreclosure model that I used as the basis for my December declaration contained a mathematical error and 2) correcting for this error would result in the reversal of my conclusion.⁶² As I discussed in Section III (Model Specification), I used the vertical foreclosure model that was provided by Drs. Rosston and Topper (as part of this proceeding) in the analysis that I conducted in support of my December declaration. At that time, I found that the formula for calculating critical departure rates used by Drs. Rosston and Topper was generally consistent with the formula expressed in the FCC's Comcast-NBCUniversal Order. In fact, Drs. Rosston and Topper cite this very formula in their February Response as the appropriate formula to use in calculating critical departure rates for a temporary foreclosure.⁶³ They state that: "The costs include Comcast's loss of license fees (*Fee*) and advertising revenues (*Ad*) over the duration of foreclosure, with the amount of *Ad* and *Fee* growing as the foreclosure lengthens."⁶⁴ However, the costs in the formula they cite to do not grow as foreclosure lengthens, because the *Ad* and *Fee* variables are monthly per subscriber costs, not cumulative costs.

⁶¹ In my previous declaration I used Drs. Rosston and Topper's average profit values and found that only {{ }} of rival MVPD-O&O markets were predicted to experience a price increase of five percent or higher when departure rates are at the 3% level, and {{ }} of rival MVPD-O&O markets were predicted to realize this level of price increase when departure rates were equal to 5%. See Zarakas December 2014 Declaration at Table 17.

⁶² Rosston-Topper February 2015 Response, at paragraphs 7-12.

⁶³ Rosston-Topper February 2015 Response, at paragraph 8.

⁶⁴ Rosston-Topper February 2015 Response, at paragraph 8.

56. I re-specified the formula for calculating critical departure rates so that it accommodates multi-period foreclosure and used this formula in updating my vertical foreclosure analysis. As indicated earlier, I include the updated formula for calculating critical departure rates in **Appendix A** to this declaration. I also compared this updated formula to the formula used by Drs. Rosston and Topper in their February Response. The formula used by Drs. Rosston and Topper assumes that all subscribers departing from rivals do so in the first period of foreclosure and all of those that are acquired by Comcast-TWC also arrive in the first period of foreclosure. I applied a graduated approach to such departures and arrivals. That is, I assume that customers depart from rivals gradually over the course of foreclosure and that Comcast-TWC acquires these customers on an equally gradual basis.⁶⁵ This approach is more conservative than the approach used by Drs. Rosston and Topper in that costs gradually decline over the course of the foreclosure and benefits gradually increase.

57. Updating the vertical foreclosure model to account for higher levels of costs over the course of a multi-period foreclosure does not negate my conclusion that constraining the vertical foreclosure analysis to only one period understates the potential for Comcast-TWC to engage in a profitable foreclosure strategy. The shape of the curves (plotting critical departure rates versus duration of foreclosure) depicted by Drs. Rosston and Topper in their February 2015 Response proves this point.⁶⁶ The slope of the curve flattens out as the duration of foreclosure increases, indicating that the degree of profitability of foreclosure increases as the length of foreclosure is extended. For example, using the calculations provided by Drs. Rosston and Topper in their Response, a one month foreclosure of DISH in New York has a critical departure rate of {{ }} but a six month foreclosure has a critical departure rate of only {{ }}, not the {{ }} that would be expected if the degree of profitability increased linearly.⁶⁷ It is true that the benefits from a foreclosure strategy do not overcome the associated costs within six months when the profit and churn-back assumptions used by Drs. Rosston and Topper are applied to the re-specified vertical foreclosure model. However, this does not prove that the “Commission’s [vertical] foreclosure model does not provide any support for program access concerns in the

⁶⁵ I applied the convention used by Drs. Israel and Katz in their analysis of multi-period foreclosure with respect to the Comcast-NBCUniversal transaction. Specifically, that over the course of a six month foreclosure, the number of departures is “somewhat larger in the early months of the dispute than in later months, with 6/21 of the departures occurring in the first month, 5/21 in the second month, and so on through 1/21 in the sixth month.” Israel and Katz July 2010 Report, at footnote 20.

⁶⁶ Rosston-Topper February 2015 Response, at Figure 1.

⁶⁷ {{
}}

current transaction,” as Drs. Rosston and Topper assert.⁶⁸ It proves that low levels of profit and high rates of churn-back are necessary conditions for Comcast-TWC to find vertical foreclosure an unprofitable proposition. I demonstrate throughout this declaration that applying profit and churn-back assumptions that are in line with those used by the Commission in its review of the Comcast-NBCUniversal transaction indicate that Comcast-TWC would find it profitable to engage in both short- and long-term foreclosure strategies in numerous cases.

B. ACTUAL DEPARTURE RATE ESTIMATES

58. Drs. Rosston and Topper have argued that I used a six month foreclosure duration (based on the Fisher-DISH dispute) in my vertical foreclosure analysis simply because it produced a higher actual departure rate than was estimated using data from the CBS-TWC dispute.⁶⁹ This is not the case. The duration of foreclosure is a factor in vertical foreclosure analyses because it affects the extent to which dissatisfied customers (of a rival MVPD) will depart and seek out new options. A complete vertical foreclosure analysis should reflect the profitability of short-term foreclosures (through which Comcast-TWC can expect to gain relatively few new customers) as well as longer-term foreclosures (through which the company will likely gain relatively more). Drs. Rosston and Topper’s vertical foreclosure analysis was thus incomplete because they only considered the case of a one month foreclosure.

59. Drs. Rosston and Topper decided upon the duration of foreclosure to include in their vertical foreclosure analysis by reviewing cases of programing black-outs and selecting a case that was both current and lent itself to difference-in-differences regression analysis. The selected case was a programming black-out of CBS on TWC which lasted roughly one month. Drs. Rosston and Topper then assumed that any dispute between Comcast-TWC and a rival MVPD would also last roughly one month. Drs. Rosston and Topper’s assumption is flawed. Their analysis of the CBS-TWC dispute may indeed indicate that TWC lost roughly {{ }} of its customers as a result of losing access to CBS programming,⁷⁰ but it does not suggest that a vertically integrated MVPD would therefore foreclose its rival for only one month, especially if it believed that it could accomplish a strategic objective of profitably acquiring more of its rival’s customers if it extended the foreclosure. Thus, it is essential to consider cases involving short-term foreclosure (e.g., as evidenced by the CBS-TWC dispute) as well as longer-term foreclosures (e.g., as evidenced by the Fisher-DISH dispute).

⁶⁸ Rosston-Topper February 2015 Response, at paragraph 12.

⁶⁹ Rosston-Topper February 2015 Response, at paragraph 13.

⁷⁰ Rosston-Topper September 2014 Report, at {{ }}.

60. Drs. Rosston and Topper also claim that conditions in the programming market have changed and evidence from the Fisher-DISH dispute is dated. Comparisons of the estimated departure rates (from the difference-in-differences regressions) for the one month CBS-TWC dispute and the six month Fisher-DISH dispute indicate that departure rates increase as the duration of foreclosure lengthens, with the departure rate associated with the six month dispute being roughly {{ }} the rate of departure associated with one month foreclosures.⁷¹ Even if we assume that the ratio of a six month departure rate to a one month departure rate is equal to {{ }}, and use a six month actual departure rate of {{ }}, the vertical foreclosure analysis would indicate that Comcast-TWC would find it profitable to engage in a six month foreclosure strategy in {{ }} cases.

61. As is shown in Section IV (Updated Vertical Foreclosure Analysis), I conducted the vertical foreclosure analysis under both short- and long-term foreclosure scenarios. The updated results indicate that Comcast-TWC would also find it profitable to engage in a one month foreclosure strategy in numerous cases (in addition to finding it profitable for Comcast-TWC to engage in longer-term foreclosure strategies). Thus, even if Drs. Rosston and Topper only conduct their analysis for the case of a one month foreclosure strategy – which, as I discussed, would be inappropriate – they would find {{ }} cases where such a strategy would be profitable to Comcast-TWC.

C. AMORTIZATION AND TECHNICAL ISSUES

62. Drs. Rosston and Topper are critical of two primary areas associated with the variables and assumptions used in my vertical foreclosure analysis.⁷² First, they take issue with my comment concerning their treatment of profit and acquisition cost in the vertical foreclosure model. Second, they raise issues concerning certain expenses and offsetting installation revenues that are deducted from average revenues in calculating profits.

63. Drs. Rosston and Topper's comments concerning the treatment of profit during the FCC's Economic Analysis Workshop and in their February Response are important because they highlight a key difference between the structure of their model and the model that has been used by the Commission in its review of the Comcast-NBCUniversal transaction.

⁷¹ {{ }}

⁷² These criticisms are based on comments that I made in the FCC's Economic Analysis Workshop, since Drs. Rosston and Topper would not have seen the contents of this declaration at the time of their February 2015 Response.

64. Drs. Rosston and Topper acknowledge that the Commission’s methodology already recognizes that any subscribers that are gained by Comcast-TWC as a result of foreclosing a rival are not a guaranteed source of profit going forward, and any calculation of profit needs to take this into consideration. The Commission’s formula for calculating critical departure rates takes into account the churn-back of customers (i.e., the loss of newly acquired customers back to their original MVPD after the foreclosure period ends). In fact, the Commission includes two periods of churn-back, one for the first month following the end of foreclosure and another rate of churn-back for the remaining periods in the analysis. The initial churn-back rate is relatively high (compared to Comcast’s average level of churn) to reflect the expectation that some of the newly acquired customers prefer their pre-foreclosure MVPD to Comcast-TWC and will return there as soon as the foreclosed programming has been restored. The Commission’s model thus adjusts the benefits associated with a foreclosure strategy to reflect the short tenured nature of some new customers.

65. In their February Response, Drs. Rosston and Topper imply that a series of profit levels, as they use in their vertical foreclosure model, can be equivalent to a single number applicable to the Commission’s model. While such a translation is mathematically possible, their statement minimizes the key difference between their model and the Commission’s model. Drs. Rosston and Topper break the profit variable into {{ }} based on variations in customer tenure, while the Commission’s model uses a single average profit (for each of the markets analyzed). Specifically, the {{ }} front-loads certain installation-related expenses which cause profits to be {{ }} in the model’s first period, thereby {{ }} of any benefits associated with a foreclosure strategy.

66. I commented in the FCC Economic Analysis Workshop, that the {{ }} used by Drs. Rosston and Topper is a major departure from the profit variable specified by the Commission in its review of the Comcast-NBCUniversal transaction, and has perhaps the single most significant impact on model results. Drs. Rosston and Topper did not dispute that their model differs significantly from that previously used by the Commission, and acknowledged that their model “may not have been what the FCC did in its final order on this, but I think it's what was submitted and how the model should work.”⁷³ However, in their February Response, Drs. Rosston and Topper appear to play down the difference between the two approaches. They contend that their {{ }} can be transformed into the single profit number that is used in the Commission’s model.⁷⁴ In fact however, their single

⁷³ FCC Economic Analysis Workshop, January 30, 2015, Transcript at page 231:12-14.

⁷⁴ Rosston-Topper February 2015 Response, at footnote 34.

number would reflect their {{ }} and therefore would not resemble the average profit variable used by the Commission in its prior review.

67. Drs. Rosston and Topper made this point that their profit function can be expressed as an equivalent single number by proving equality between a front-loaded acquisition cost and an amortized monthly acquisition cost.⁷⁵ However, their demonstration only proves, and I do not dispute, that any cash flow can be converted into a single number. As I discussed in Section II, I calculated the amortized cost of subscriber acquisition using the life of an average customer, an accepted method for calculating amortized values, and deduct this value (along with variable costs and the amortized monthly value of CPE) from the average revenues that Comcast-TWC can expect to receive from new video subscribers in calculating the value for average profit that I use in the vertical foreclosure analysis.

68. The second area that Drs. Rosston and Topper criticized concerned my comments in the Economic Analysis Workshop regarding expenses and installation revenues.⁷⁶ My comments there were intended to highlight that Drs. Rosston and Topper used two sets of data in their analysis: 1) they relied on {{ }} to calculate average revenue and average variable expenses across all Comcast video subscribers,⁷⁷ and 2) they relied on {{

}}⁷⁸ Using different cost data sets, sometimes from {{ }} and other times from alternative sources of information could produce distorted results.

69. I also made the point that {{ }}. Notably, {{ }} likely are targeted at attracting new customers as well as retaining existing customers. Assigning {{ }}.

⁷⁵ Rosston-Topper February 2015 Response, at paragraph 27.

⁷⁶ Rosston-Topper February 2015 Response, at paragraphs 29-30.

⁷⁷ As noted above, Drs. Rosston and Topper's variable expenses included {{ }} in addition to the variable programming expense.

⁷⁸ {{ }}. This data reflects "the amount Comcast spends in advertising, marketing, and related sales efforts for each new connect." A new connect is any newly connected service (e.g. video) so new triple play subscriber would count as three new connects. See September 11, 2014 Responses of Comcast Corporation to the Commissions Information and Data Request, 4(k).

70. Drs. Rosston and Topper also asserted that I erred in recognizing that they included the offsetting impact of installation revenues in their calculation of subscriber acquisition costs. This is not correct. At the Economic Analysis Workshop, I commented that it is appropriate to include installation revenues in this calculation (not that Drs. Rosston and Topper had neglected to do so). However, my comment also reflected the fact that Drs. Rosston and Topper used a mix of data sources. Installation revenues provides another good example: values for installation revenues are provided {{

}}⁷⁹

D. THE EFFECT OF BUNDLING ON PROFITS AND FORECLOSURE

71. Drs. Rosston and Topper calculated profits from new video subscribers using video service revenues only. In their February Response, they addressed a request from Commission Staff for them to report how their analysis would change if they calculated profit using bundled as well as stand-alone video service revenues. As I discussed earlier, profit is calculated as revenues less the sum of variable costs, amortized monthly acquisition costs, and amortized monthly CPE costs. Thus, increasing revenues to account for bundling has an effect on profit and, therefore, affects the calculation of critical departure rates.

72. The revenues that Comcast-TWC can expect to realize from its new customers depend on the mix of stand-alone and bundled services subscribed to by these customers. My analysis above calculates the average monthly revenues that Comcast-TWC can expect from new customers based on its experience with new connects, {{

}}. This is also the approach taken by the Commission in its review of the Comcast-NBCUniversal transaction. In fact, Drs. Rosston and Topper point out that the Commission's approach was based on a recommendation from Drs. Israel and Katz.⁸⁰ I applied an additional conservative adjustment to my calculation of bundled revenues. Specifically, I assumed that customers of DBS-based rivals may already receive certain services from Comcast-TWC (notably, data services) and adjusted downward the new revenues that Comcast-TWC could expect to receive from these customers.

⁷⁹ FCC Information Request 122, {{

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⁸⁰ Rosston-Topper February 2015 Response, at paragraph 32 and corresponding footnote.

73. But Drs. Rosston and Topper chose not to follow this approach in responding to Commission Staff's request. Instead, they developed a series of scenarios concerning the mix of stand-alone and bundle services subscribed to by customers gained from foreclosed rivals. First, they made no adjustment to revenues from recently acquired customers from foreclosed DBS-based rivals. Drs. Rosston and Topper segmented potential customers from foreclosed DBS-based rivals into three categories, but they concluded that, irrespective of category, none of these new customers will subscribe to any incremental service other than video.⁸¹ This is unreasonable. Drs. Rosston and Topper are correct that the profit potential from new customers from foreclosed DBS-based rivals is less than the potential from new customers of foreclosed wireline-based rivals. However, it is it is unreasonable to assume that none of the new customers (that do not already subscribe to Comcast data services) would be interested in bundling their video service with another Comcast service. I addressed this issue in Section II of this declaration. I calculated customer compositions for new customers from foreclosed wireline-based rivals (Table 2) and for customers from foreclosed DBS-based rivals (Table 4). I took into account the likelihood that many of customers from foreclosed DBS-based rivals already receive data services from Comcast-TWC and I adjusted the composition and resulting ARPU to reflect only the incremental revenues that Comcast-TWC could expect to receive from these customers.

74. Second, Drs. Rosston and Topper significantly discounted the profit potential from new customers from foreclosed wireline-based rivals (i.e., AT&T, Verizon, and RCN). {{

}}

⁸¹ Rosston-Topper February 2015 Response, at paragraphs 34 – 37.

⁸² Rosston-Topper February 2015 Response, at paragraphs 38 – 41, and supporting workpapers.

⁸³ As indicated in {{

}}

⁸⁴ Drs. Rosston and Topper use {{

75. Drs. Rosston and Topper concluded that increasing revenues, and thereby profits, to reflect the impact of new customers subscribing to bundles of services (beyond the revenues and profits from only video services) would not have an impact on their vertical foreclosure analysis.⁸⁵ However, this is completely contrary to the results of the updated vertical foreclosure analysis that I presented above. The difference in composition of new customers subscriptions discussed above provides only a partial explanation of the difference in results. I conducted a sensitivity analysis in which I applied the customer composition percentages developed by Drs. Rosston and Topper to my vertical foreclosure model. The results indicated that Comcast-TWC would find it profitable to engage in foreclosure strategies in numerous cases. The stark difference in our foreclosure results is largely due to the {{ }} used by Drs. Rosston and Topper. This makes it so that the benefits that Comcast-TWC can expect to realize from a foreclosure strategy almost always lag considerably behind costs.

VII. Conclusion

76. My updated and expanded analysis reveals striking contrasts with the conclusions of Drs. Rosston and Topper. In conducting my initial analysis, I used both the vertical foreclosure model provided by Drs. Rosston and Topper as well as the assumptions that they applied. I altered only the duration of foreclosure and found that constraining the vertical foreclosure analysis to only one period understated the potential for Comcast-TWC to engage in a profitable foreclosure strategy. In updating my analysis, I corrected the limitations of the model (i.e., adjusted so that multi-period foreclosures are now accommodated) and also examined and modified several key assumptions that were applied by Drs. Rosston and Topper. Re-specifying the model resulted in higher levels of foreclosure costs. By itself, this would result in higher critical departure rates and reduce the prospects of foreclosure. However, the updating exercise also provided the opportunity to examine the profit assumption in greater detail, which, as demonstrated throughout this declaration, has an exceptionally large impact on the outcome of the vertical foreclosure analysis.

77. The updated analysis indicates that Comcast-TWC would indeed find it profitable to engage in a six month foreclosure strategy in a large number of cases. However, updating the

Continued from previous page

}}

⁸⁵ Rosston-Topper February 2015 Response, at paragraphs 44 – 45.

cost and profit functions in the model also indicates that a much shorter term foreclosure would also be profitable in many of these cases. That is, it is more profitable for Comcast-TWC to engage in a longer-term foreclosure strategy (and therefore the duration of foreclosure remains a consequential factor in the vertical foreclosure analysis), but the company could accomplish much of the goal of foreclosure (i.e., gaining additional customers from rivals) by engaging in a shorter-term strategy.

78. The vertical foreclosure analysis presented by Drs. Rosston in Topper in their September 2014 report was based on a profit function that is both considerably lower and different in form than the monthly profit per residential video subscriber that I use in my analysis. The profit level that I use in my analysis follows the specifications used by the FCC in prior reviews of vertical foreclosure; Drs. Rosston and Topper's does not.

79. The Commission also requested that Drs. Rosston and Topper develop additional scenarios of their vertical foreclosure analysis, reflecting different specifications of profit. Drs. Rosston and Topper conducted analyses for cases in which 1) profit was equal to video revenues less variable costs only, and 2) profit was equal to bundled video revenues less variable and step costs. In analyzing both of these scenarios, Drs. Rosston and Topper used their {{

}} function. They then claimed that their initial conclusion stood, irrespective of any variations in the definition of profit. However, they are only able to assert their claim by carefully constructing scenarios that do not put all the pieces together (i.e., bundled revenues, variable costs only and a single average profit function). As I demonstrated throughout this declaration, defining profit to be bundled video revenues less variable costs indicates that Comcast-TWC would find it profitable to engage in both short-term and longer-term foreclosure strategies.

REDACTED – FOR PUBLIC INSPECTION

* * *

The foregoing declaration has been prepared using facts of which I have personal knowledge or based upon information provided to me. I declare under penalty of perjury that the foregoing is true and correct to the best of my current information, knowledge, and belief.

Executed on March 25, 2015.

A handwritten signature in cursive script, appearing to read "William P. Zarakas", written in dark ink.

William P. Zarakas
Principal
The Brattle Group

**Tables and Appendix
redacted in their entirety**